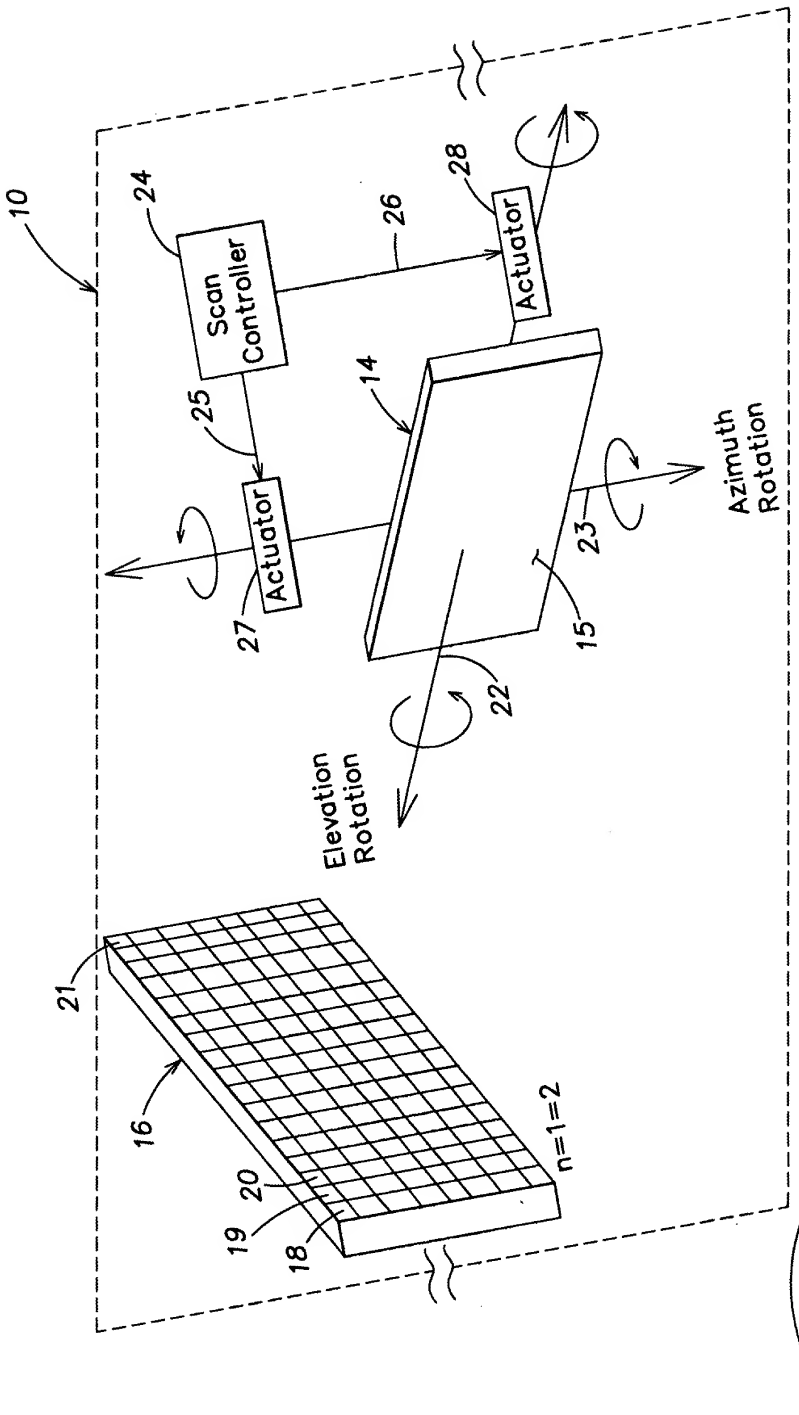
10
24
Scan Controller
26
28
Actuator
14
25
Actuator
27
Azimuth Rotation
23
15
22
Elevation Rotation
21
16
20
19
18
n=1=2
12
EARTH

FIG. 1

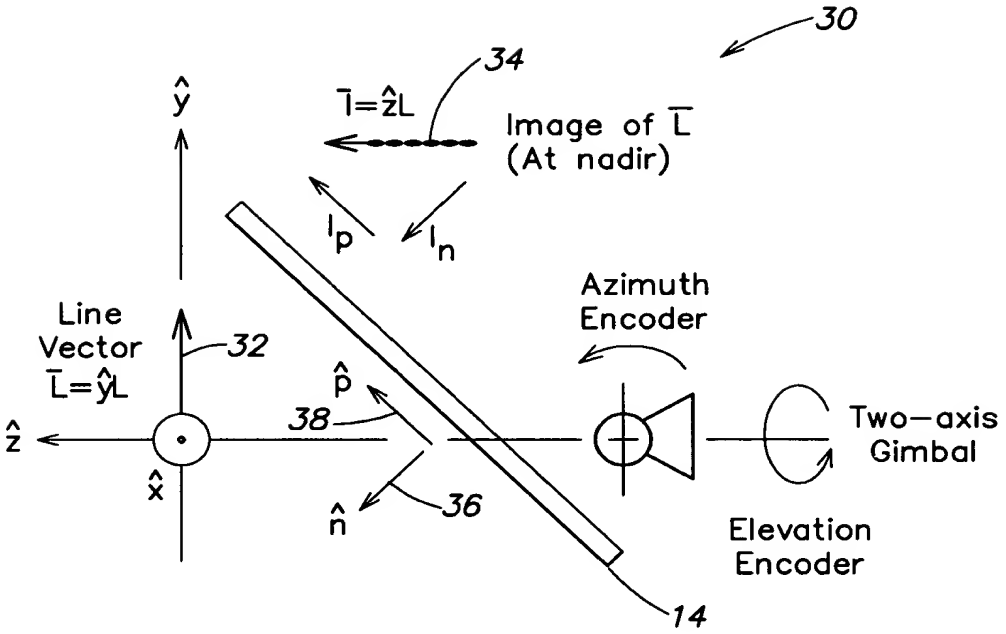
30
34
$\bar{l}=\hat{z}L$
Image of $\bar{L}$
(At nadir)
$\hat{y}$
l_p
l_n
Azimuth
Encoder
Line
Vector
$\bar{L}=\hat{y}L$
32
$\hat{p}$
38
$\hat{z}$
$\hat{x}$
$\hat{n}$
36
Two-axis
Gimbal
Elevation
Encoder
14

FIG. 2

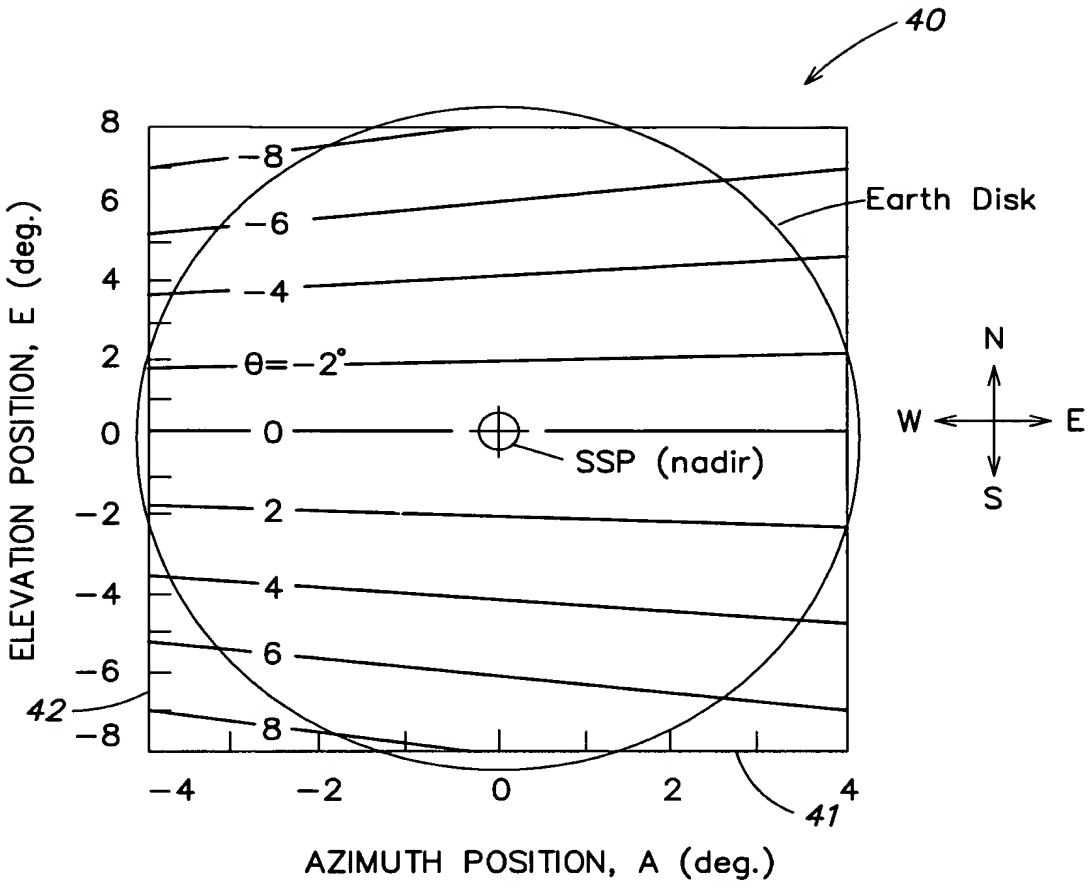
40
Earth Disk
N
W
E
S
SSP (nadir)
θ=−2°
ELEVATION POSITION, E (deg.)
AZIMUTH POSITION, A (deg.)
42
41
8
6
4
2
0
−2
−4
−6
−8
−4
−2
0
2
4

FIG. 3

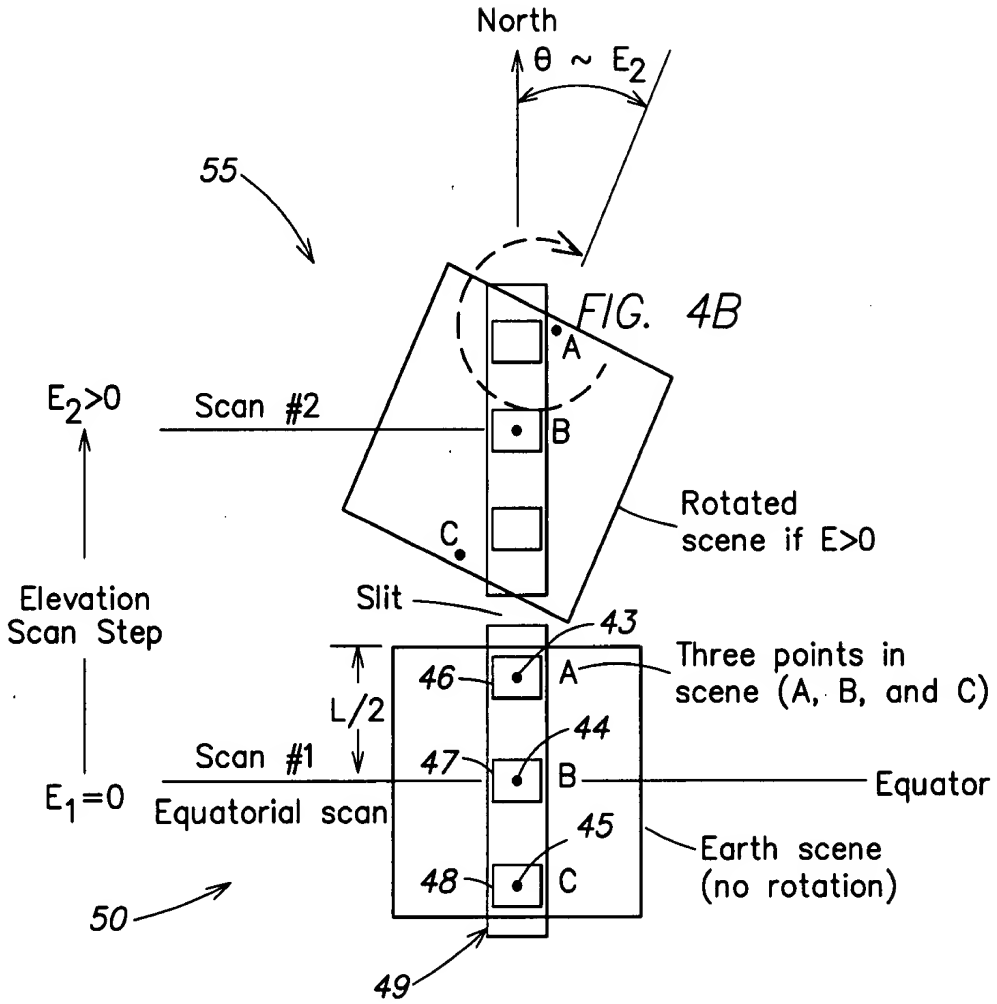
North
θ ~ E2
55
FIG. 4B
A
E2>0
Scan #2
B
C
Rotated
scene if E>0
Elevation
Scan Step
Slit
43
46
A
Three points in
scene (A, B, and C)
L/2
44
Scan #1
47
B
Equator
E1=0
Equatorial scan
45
Earth scene
(no rotation)
48
C
50
49

FIG. 4A

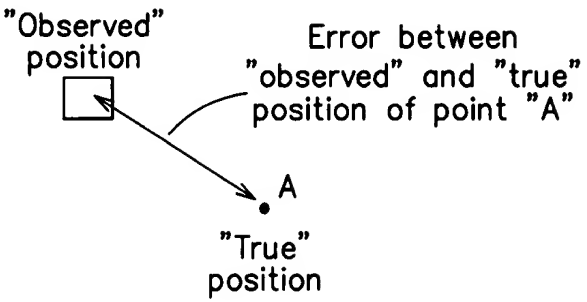
"Observed"
position
Error between
"observed" and "true"
position of point "A"
A
"True"
position

FIG. 4B

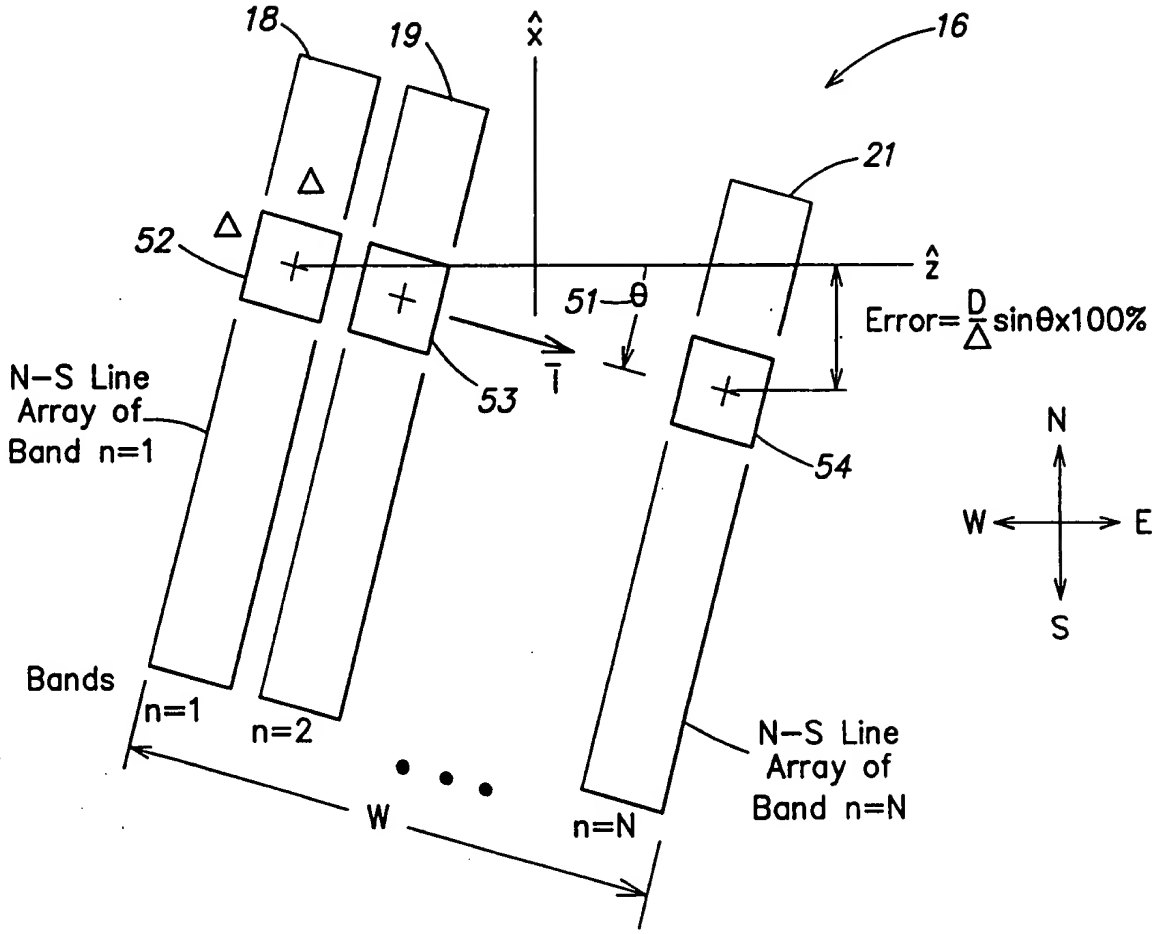
18
19
16
21
52
51
θ
53
54
N–S Line
Array of
Band n=1
Error=$\frac{D}{\Delta}$sinθx100%
N
W
E
S
Bands
n=1
n=2
n=N
W
N–S Line
Array of
Band n=N

FIG. 5

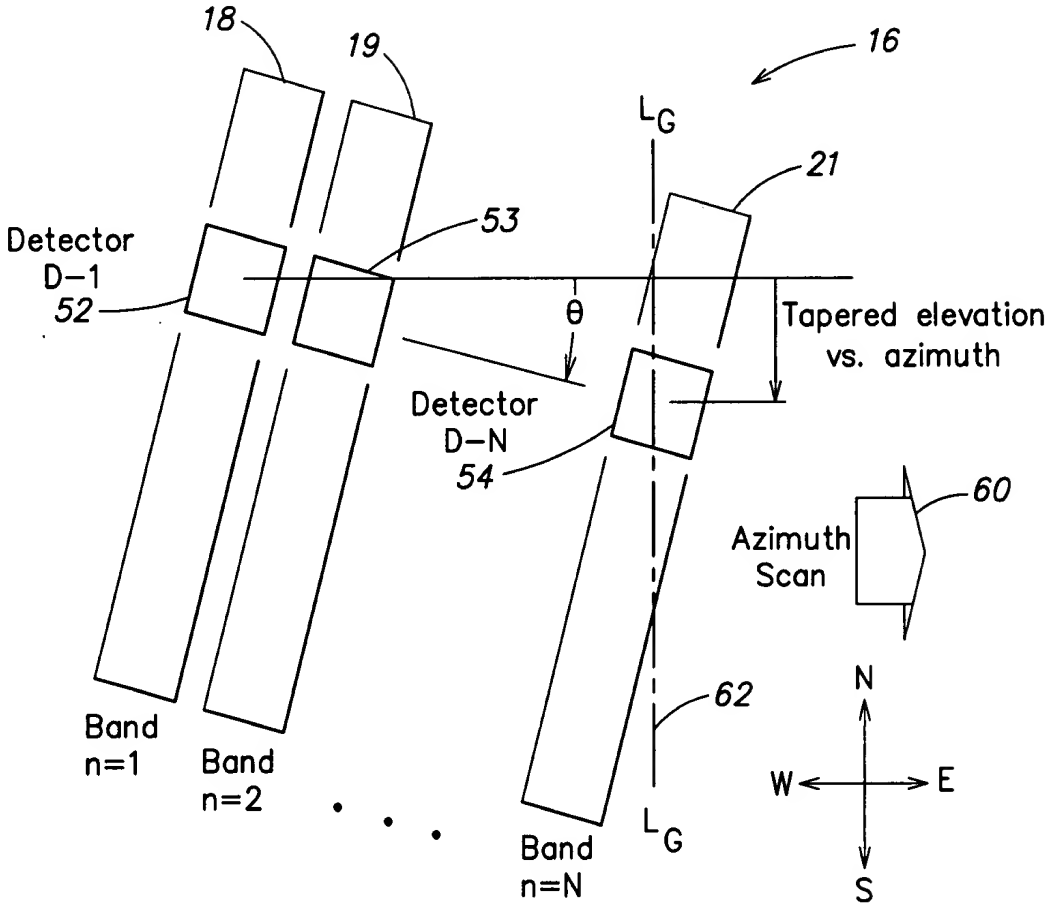
18
19
16
L_G
21
53
Detector
D–1
52
θ
Tapered elevation
vs. azimuth
Detector
D–N
54
60
Azimuth
Scan
62
N
W
E
S
Band
n=1
Band
n=2
Band
n=N
L_G

FIG. 6

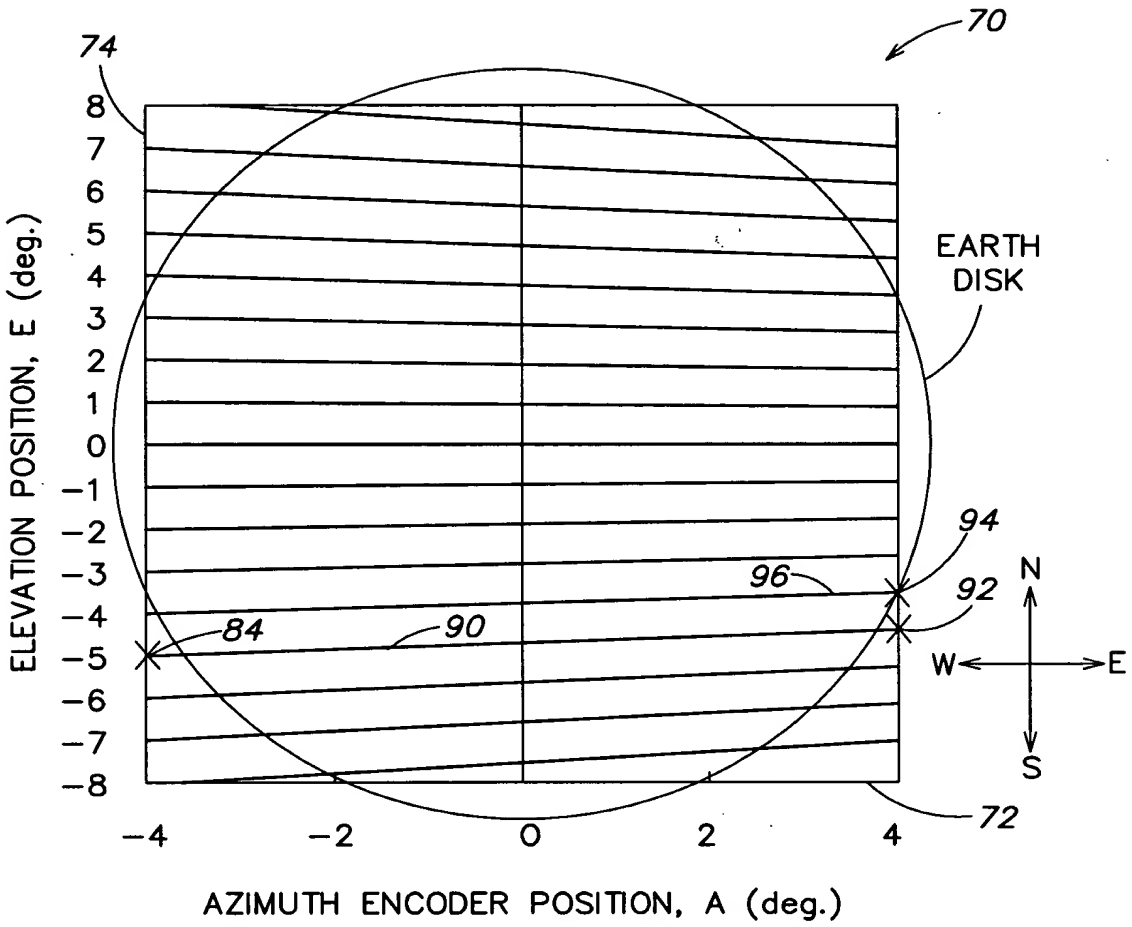
70
74
8
7
6
5
4
3
2
1
0
−1
−2
−3
−4
−5
−6
−7
−8
ELEVATION POSITION, E (deg.)
EARTH
DISK
94
96
92
84
90
N
W
E
S
72
−4
−2
0
2
4
AZIMUTH ENCODER POSITION, A (deg.)

FIG. 7

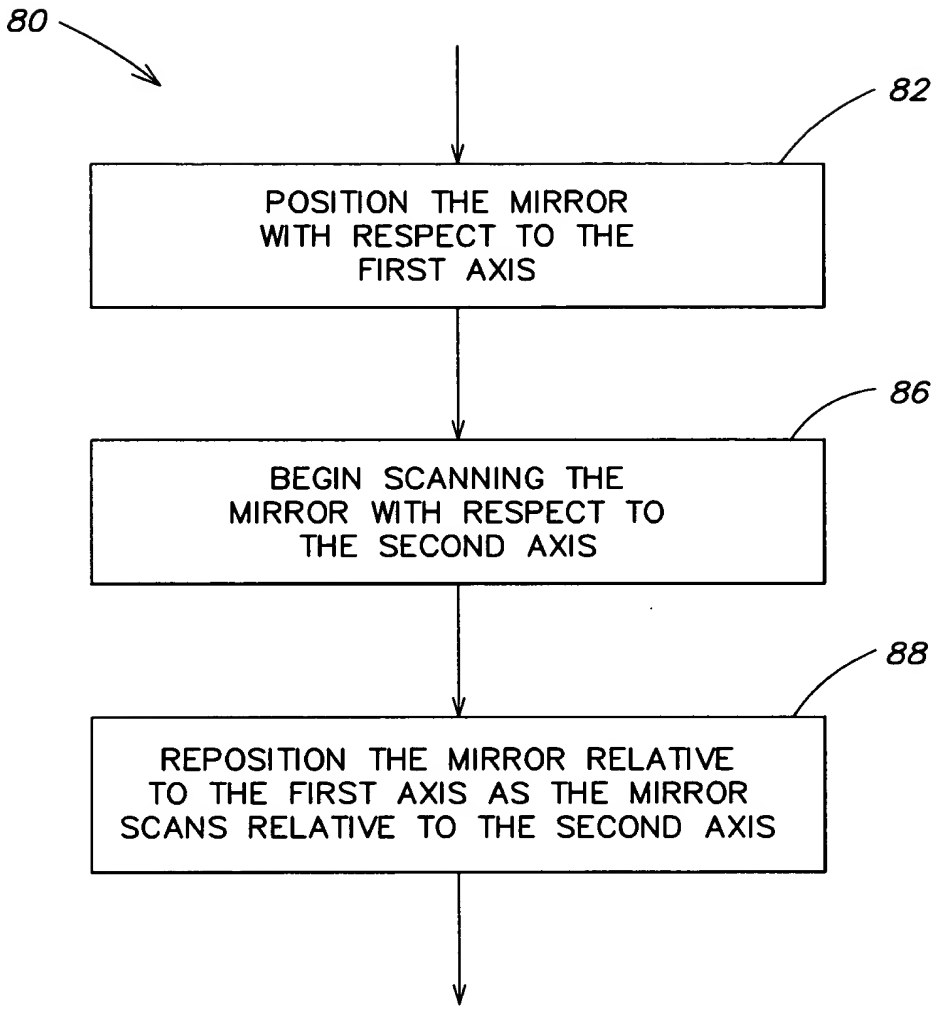
80
82
POSITION THE MIRROR WITH RESPECT TO THE FIRST AXIS
86
BEGIN SCANNING THE MIRROR WITH RESPECT TO THE SECOND AXIS
88
REPOSITION THE MIRROR RELATIVE TO THE FIRST AXIS AS THE MIRROR SCANS RELATIVE TO THE SECOND AXIS

FIG. 8